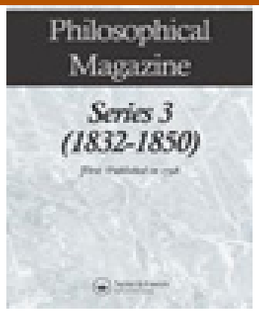

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Preparation of iodide of lead

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The explosibility of incandescent nitre with water was illustrated in the small way, by heating a portion in a platina capsule by the flame of a hydro-oxygen blowpipe, and sudden immersion in the liquid. So active was the explosion, that a portion of the resulting hydrate flew out upon the operator. Yet, when thrown in the same state upon molasses or sugar, no explosion ensued: nevertheless, when a capsule containing nitre heated to the point of volatilization was struck with the face of a hammer coated with sugar melted upon it and made to adhere by moisture, a detonation took place. A still more powerful detonation was produced as follows:—Upon an anvil a disc of paper of three inches in diameter was laid, covered with pulverized sugar: over the sugar was placed another similar disc, covered with pulverized nitre: a bar of iron rather wider than the discs at a welding heat was then held over them, and subjected to a blow from a sledge. An explosion, with a report like that of a cannon, ensued.

Instructed by the facts and considerations above stated, it is inferred that the explosions which contributed to extend the conflagration in New York, as above mentioned, arose from the reaction of the nitre with the combustible merchandize with which it was surrounded. It is presumed that as soon as the fire reached any of the gunny bags it must have run rapidly through the whole pile, by means of the interstices necessarily existing between them, the nitre with which they were imbued causing them to deflagrate. Much of the salt being thus brought to the temperature of fusion, it must have run about the floor, reached the combustibles, and soon found its way to the next story through the scuttles which were open. All the floors must have been rapidly destroyed by the consequent deflagration, far exceeding in activity any ordinary combustion. Meanwhile, the nitre being all liquefied and collected in the cellar in a state of incandescence, and the merchandize conglomerated by the fusion of sugar and shell-lac, aided by the molasses, the weight, the liquidity, and temperature, must have produced all the conditions requisite to intense detonations. The floors having been consumed, the store must have been equivalent to an enormous crucible of twenty feet by ninety, at the bottom of which were nearly 300,000 lbs. of nitre, superficially heated far above the temperature producible by any furnace, so as to convert the reagents into nascent aëriform matter under a pressure of half a million of pounds. The intense reaction, however, would not permit of durable contact. At each impact the whole mass must have been thrown up explosively, and hence the successive detonations. But the chemical reaction, the heat, and the height of the fall, growing with their growth, and strengthening with their strength, the last elevation was succeeded by the thundering report and stupendous explosion of which it has been an object to afford a satisfactory explanation.—*From the Journal of the Franklin Institute.*

PREPARATION OF IODIDE OF LEAD. BY M. T. HURAUT.

The author remarks that several processes are known for the preparation of iodide of lead; all of which give tolerably satisfactory results. When carefully employed they yield a pure product, and the

quantity obtained differs but little from that indicated by theory; it is, therefore, of little consequence which of the processes is adopted in preparing small quantities of the iodide; the case is, however, different when considerable quantities of the ingredients are employed, as in this case the differences are too considerable to be neglected.

The author thinking that some experiments which he has made on the subject would not be uninteresting, has published them; and in every case such a quantity of iodine or iodide was employed as ought to yield, by theory, 18·20 grammes of iodide of lead.

Process by Iodide of Potassium.—This process is that originally employed; it consists in decomposing iodide of potassium by a salt of lead. The Codex prescribes the neutral acetate, but this salt has been generally abandoned since it was discovered by M. Depaire and Felix Boudet, that nearly one-tenth of the iodide of lead was dissolved by the acetate of potash formed; 13·10 grammes of iodide of potassium containing 10 grammes of iodine were treated with neutral acetate of lead; the weight of the iodide precipitated was 15·70 to 15·80 grammes.

To avoid the loss occasioned by the use of acetate of lead, M. Boudet proposed to substitute the nitrate for it; by this process M. Huraut obtained with 13·10 grammes of iodide of potassium from 17·50 to 17·55 of iodide of lead.

Iodide of lead prepared with iodide of potassium is of a fine lemon-yellow colour, and entirely soluble in boiling water.

Process by Iodide of Sodium.—Ten grammes of iodine converted into this salt gave with acetate of lead 15·90 to 16·10 of iodide, and with the nitrate 16·85 to 16·95. It resembled that obtained with iodide of potassium perfectly.

Process by Iodide of Calcium.—A quantity of this containing 10 grammes of iodine, gave 17·60 to 17·70 of iodide of lead, of a fine orange-yellow colour. In one experiment, so performed as to produce a crystalline iodide, the product was remarkably brilliant; with acetate of lead 17·25 to 17·40 of iodide were produced, also of a fine orange-yellow colour.

Process by Iodide of Iron.—Ten grammes of iodine converted into iodide of iron and treated with neutral acetate of lead, gave 16·70 to 16·75 grammes of iodide of lead; with nitrate the products were 17·50 grammes; they were orange-yellow, and totally soluble in boiling water in both cases.

Process by Iodide of Zinc.—This salt is now perhaps that most commonly employed in preparing iodide of lead; the preference given to it arises from the facility with which it is prepared, its great solubility and unalterability in the air; 10 grammes of iodine converted into this salt gave with acetate of lead 17·05 to 17·15 grammes of product, and with the nitrate 17·40 to 17·45. The colour is palish orange-yellow.

Process by the double Iodide of Potassium and Lead.—This is a complicated plan proposed by M. Thevenot; the author compared the product with that afforded by the above-described processes; the comparison was in favour of the latter. M. Huraut concludes from the above-described experiments, that in the preparation of

iodide of lead the nitrate ought to be preferred to the acetate, on account of the greater quantity of product which it yields.

The process by iodide of calcium is the most advantageous both as to the quality and quantity of the product.

The two processes by iodide of iron and iodide of zinc yielding equally fine and abundant products, it is nearly indifferent which is employed.

The process by iodide of sodium offers no advantage, and that by iodide of potassium is the least economical.

There is a loss of nearly 10 per cent. in preparing iodide of lead on using iodide of potassium and acetate of lead; the greater part of which loss may, however, be avoided by substituting the nitrate, or by adding to the supernatant liquor a sufficient quantity of nitric acid to decompose the acetate of potash.—*Journ. de Pharm. et de Chem*, Janvier 1849.

ON THE PROTOGINE OF THE ALPS. BY M. DELESSE.

The author observes that protogine usually contains five different minerals, which are, quartz, orthose, oligoclase, mica with a base of iron, and a variety of talc: these may be seen in the protogine of Mont Blanc. These minerals are not however equally distributed, and one or more of them are frequently wanting; but then the minerals which remain have so preserved the same characters as those which they possessed when the five elements are present in the rock, that it is impossible not to consider them as formed under the same circumstances; they constitute therefore varieties of the original rock, into which they pass insensibly, both by their mineralogical characters and their geological relations.

Quartz.—Quartz forms one of the important elements of protogine as of all granitic rocks. When the rock has a well-characterized granitic structure, the quartz of the paste is sometimes confusedly crystallized; generally, however, this does not occur, and it is hyaline, gray or violet; when it is in crystals of several centimetres in thickness, as seen in some veins, instead of being reddish or violet, it generally has a deepish black colour, and is of the variety called smoky quartz.

It may be stated generally that in fracturing pieces having the usual thickness of the grains of quartz or the paste of the rock, the difference of colour is derived rather from the greater thickness of the quartz in the veins than from the presence of a greater quantity of colouring matter.

This colour of quartz, which is observable in many granitic rocks, is derived from organic matter, which is volatile without leaving any residue, and disappears completely by slight calcination, the quartz losing only twelve thousandths, and becoming white and transparent.

This organic matter is not volatile *in vacuo* at common temperatures, for it does not disappear by exposing the quartz for several